Section 431—Grind Concrete Pavement

431.1 General Description

This work includes grinding existing Portland cement concrete pavement to eliminate joint faulting or to restore proper drainage and riding characteristics to the pavement surface. Perform the work according to these Specifications and the Plans.

431.1.01 Definitions

General Provisions 101 through 150.

431.1.02 Related References

A. Standard Specifications

General Provisions 101 through 150.

B. Referenced Documents

GDT 78

GDT 126

431.1.03 Submittals

General Provisions 101 through 150.

431.2 Materials

General Provisions 101 through 150.

431.2.01 Delivery, Storage, and Handling

General Provisions 101 through 150.

431.3 Construction Requirements

431.3.01 Personnel

General Provisions 101 through 150.

431.3.02 Equipment

A. Grinding Equipment

Use power driven, self-propelled grinding equipment with these characteristics:

- Diamond blades designed to smooth and texture Portland Cement concrete pavement
- Effective wheel base of at least 12 ft (3.6 m)
- Pivoting tandem bogey wheels at the front of the machine
- Rear wheels arranged to travel in the track of the freshly cut pavement
- Grinding head with the center no further than 3 ft (900 mm) forward from the center of the back wheels

Ensure that the equipment:

- Cuts or planes at least 3 ft (900 mm) wide
- Operates without encroaching on traffic movement outside the work area
- Grinds the surface without causing spalls at cracks, joints, or other locations

Periodically check the equipment to ensure that it is in proper working order, especially the wheel “roundness” on the grinding equipment. Immediately correct “out-of-round” wheels.

B. Rainhart Profilograph

Use the Rainhart Profilograph to test ground pavement surfaces on ramps, acceleration and deceleration lanes, and other areas not suitable for testing with the Road Profiler for Pavement Profile Index value.

431.3.03 Preparation

Complete spall repairs, slab replacements, and pressure grouting in the area to be ground before beginning grinding operations.

431.3.04 Fabrication

General Provisions 101 through 150.

431.3.05 Construction

Grind the pavement surface areas designated on the Plans. Only grind bridge decks and roadway shoulders when they are indicated on the Plans, required to promote drainage, or required to conform to smoothness requirements if the work is new construction or bridge decks.

Grind the surface areas as follows:

1. Schedule the construction operation to produce a uniform finished surface.
2. Maintain a constant cross slope between grinding extremities in each lane to ensure that grinding provides positive lateral drainage.
3. Transition auxiliary or ramp lane grinding from the mainline edge and at the end of the cut to provide positive drainage and acceptable riding surface.
4. Grind the entire area designated on the Plans until the pavement surfaces of the adjacent sides of transverse joints and cracks are in the same plane.
5. Eliminate the faulting at joints and cracks, and ensure that the overall riding characteristics are within the limits specified.
6. Texture the pavement surface, but do not grind extra depth to eliminate minor depressions.
7. Remove grinding residue before it is blown by traffic action or wind. Do not allow residue to flow into gutters, drainage facilities, or across lanes used by public traffic.
8. Ensure that the operation produces pavement that conforms to the typical cross section and requirements in Subsection 431.3.06, "Quality Acceptance."

431.3.06 Quality Acceptance

Produce a pavement surface that is true to grade and uniform with a longitudinal line-type texture.

A. Texture

Ensure that the line-type texture contains corrugations that are parallel to the outside pavement edge and have a narrow ridge corduroy-type appearance.

B. Grooves

Ensure that the peaks of the ridges are 1/16 in, ± 1/32 in (1.6 mm, ± 0.8 mm) higher than the bottoms of the grooves with 57 to 60 (185 to 200) evenly spaced grooves per foot (meter). Select the number of grooves per foot (meter) to produce the surface finish for each aggregate type that is in the concrete surface on the project. Groove spacing that does not meet the specified surface finish will not be accepted.

C. Finished Pavement Surface

Correct deficiencies in the final surface finish from improper operation or equipment at no expense to the Department. This includes, but is not limited to:

- Pavement corrugation due to "out of round" wheels on grinding equipment
- Improper cutting head operations that cause the head to ride in and out of the pavement when encountering light and heavy cuts
- Depressions created from improper starting and stopping during the cutting operation
- Unground ridges left in the pavement from defective blades in the grinding head

Closely check the ground pavement surface during grinding, and take corrective action if any of the above deficiencies occur. The finished pavement surface will be measured for riding quality using the Laser Road Profiler according to test procedure GDT 126.

Follow these requirements to ensure that the grinding produces an acceptable riding surface:

1. Ensure that the ground pavement surfaces on the mainline meet a pavement ride index value not exceeding 900 on each 0.25 mile segment (0.5 km segment) for each vehicle lane.
2. Conduct tests according to GDT 126. Calculate and report smoothness values for each 0.25 mile (0.5 km) section of each vehicle lane.
3. Regrind areas that do not meet the smoothness requirements at no additional cost to the Department.

D. Regrinding

To regrind areas to meet the smoothness or final surface finish:

1. Regrind the entire lane width in the area to be corrected. Regrind of just a portion of the lane width will not be permitted
2. Perform spot regrinding on moderate to major deviations throughout the deficient 0.25 mile (0.5 km) section of the lane to meet the smoothness and final surface finish requirements. Spot regrinding of just the largest deviations of a portion of the deficient 0.25 mile (0.5 km) lane section will not be permitted.

The Engineer may require profilograph traces before regrinding to locate deviations within a failed area. The Department will perform profilograph testing according to GDT 78. Provide traffic control for profilograph testing at no cost to the Department.

The Engineer may require profilograph testing of ground surfaces on the mainline that meet the smoothness requirements. Testing will be performed according to GDT 78 to isolate locations with individual bumps or depressions greater than 0.20 in (5 mm) outside the blanking band. Perform corrective grinding to eliminate these bumps or depressions at no additional cost to the Department.

Ensure that the Pavement Profile Index value readings on ramps, acceleration and deceleration lanes, and other areas not suitable for Road Profiler testing do not exceed 7 in/mile (100 mm/km) when tested in accordance with GDT 78. If they are exceeded:

- Regrind the areas that exceed this value at no additional cost to the Department.
- Regrind individual bumps or depressions greater than 0.20 in (5 mm) outside the blanking band on the profilograph trace at no additional cost to the Department.

Inspect transverse joints and random cracks to ensure that adjacent surfaces are in the same plane. Grind surface misalignments greater than 1/16 in (2 mm) of the surface planes on adjacent sides of the joints or cracks until the surfaces are flush.

E. Pavement Transverse Slope

Ensure that the pavement transverse slope is uniform and that depressions or slope misalignments are not greater than 1/8 in. in 12 ft (3 mm in 3.6 m) when tested with a straightedge placed perpendicular to the centerline.

1. Minimize vertical alignment mismatches between adjacent cuts, 1/16 in (2 mm) maximum.

2. Check the transverse slope closely as the work progresses. Correct mismatches immediately.
3. If one or more lanes are not to be ground, ensure that the vertical interface edge between the ground and unground lanes is not misaligned more than 1/8 in. (3 mm).

   Feather the cut from the ground lanes into the unground lanes to meet this requirement.

431.3.07 Contractor Warranty and Maintenance

General Provisions 101 through 150.

431.4 Measurement

Pavement grinding on existing pavements is measured by the square yard (meter). Determine the quantity of pavement grinding by multiplying the finished ground width by the total length ground.

431.4.01 Limits

General Provisions 101 through 150.

431.5 Payment

The Contract Price per square yard (meter) for grinding concrete pavement is full compensation for furnishing labor, materials, tools, equipment, and incidentals grinding the existing surface, removing residue, and cleaning the pavement according to these Specifications and as shown on the Plans.

Payment will be made under:

Item No. 431	Grind concrete pavement	Per square yard (meter)

431.5.01 Adjustments

General Provisions 101 through 150.